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7 Pages

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**INSTRUCTION PAMPHLET
FOR
ANTIAIRCRAFT RANGE INDICATOR MARK 1**

**THE A. C. GILBERT COMPANY
NEW HAVEN, CONNECTICUT**

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TYPES OF FOREIGN AIRCRAFT WHICH MAY BE ENCOUNTERED
AND THEIR WING SPAN

GERMAN			ITALIAN		
	VF (Fighter)			VF (Fighter)	
	Single Engine			Single Engine	
Name		Wing Span	Name		Wing Span
*Me 109 F4. G		33'	Caproni-Vizzola F5		39' 1"
He 113 (He 100)		31'	*Fiat CR42		31' 8"
*FW 190 A3		34' 6"	Fiat G50		35' 9"
Me 209		31' 3"	Macchi MC200		35'
			*Macchi MC202		35'
			Regianne Re2000		36'
			*Regianne Re2001		36'
			S.A.I. 207		29' 8"
	Twin Engine			VB (Bomber)	
*Me 110		54'		Two or Three Engine	
Me 210		55'	Breda Ba65		39' 9"
*Ju 88		65'	Breda Ba88		50' 10"
Hs 129 (Henschel)		50'	*Cant. Z1007 bis.		81' 10"
FW 187		51'	Caproni Ca135 bis.		61' 8"
			*Caproni Ca312		53' 4"
	VB (Bomber)		Fiat Br20M		70' 6"
	Single Engine		Piazzo P32 bis.		59'
*Ju 87B		45' 4"	Piazzo P108		106'
			*Savoia Marchetti SM79		69' 6"
			*Savoia Marchetti SM84		69'
			Savoia Marchetti SM86		46'
	Twin Engine			Seaplanes	
*Ju 86P2		77'	*Cant. Z506B		86' 10"
Ju 288		63'	Cant. Z511		132'
Do 217E2		62' 5"	*Caproni Ca312 bis.		53' 4"
He 111		73' 11"	Caproni Ca316		53' 2"
He 177		103' 4"			
Hs 129		50'			
	Four Engine				
Ju 290		123'			
He 116P		72' 3"			
FW 200K		108'			
	Seaplanes — Bombers — Reconnaissance				
	Transport				
	Single Engine		Name	Type	Wing Span
Ar 196		49' 6"	T-97	Army Fighter	35' 7"
*He 114		44' 5"	T-00	Navy Fighter	39' 4"
Fi 167		44' 4"	T-01	Navy Fighter	36'
			FW 190	Fighter	37'
			Me 109F	Fighter	32' 8"
			T-95	Navy Recon. F/P	36' 2"
	Twin Engine		T-00	Navy Recon.	37'
Ha 140		68' 10"	*T-97/3	Navy Torpedo	52'
*He 115		72' 10"	*T-99	Navy Dive Bomber	47' 5"
*Do 18		77' 9"			
				Twin Engine	
			*T-96/4	Navy Med. Bomber	82'
	Three Engine		*T-97	An Med. Bomber	72'
Do 24		88' 7"	*T-01	Navy Med. Bomber	76'
	Four Engine			Four Engine	
Do 26		98' 6"	*T-97	Navy Flying Boat	131'
Ha 139		96' 10"			

*Types most likely to be met in combat.

DESCRIPTION AND PRINCIPLE OF OPERATION

The Antiaircraft Range Indicator Mark 1 is a device designed to indicate to a machine gunner when an airplane target has approached within the range of his machine gun. This distance is determined by the stadimeter principle of similar triangles. One triangle is formed by a point at the eye of the operator and a pair of wires held at a fixed distance from the eye. The separation between the wires is adjustable at will. The other triangle is formed by the eye and the wing-spread of the airplane target at the firing range.

The indicator is designed, like a hand mirror, to be held in the hand at arm's length. In place of the mirror is a graduated plate. A two-inch hole in the plate exposes a pair of vertical wires. The distance between these wires may be varied by moving a pointer over the face of the plate.

This indicator is designed to be used against targets approaching directly toward the operator.

INSTRUCTIONS FOR OPERATOR

The following procedure should be followed in determining the range for opening fire:

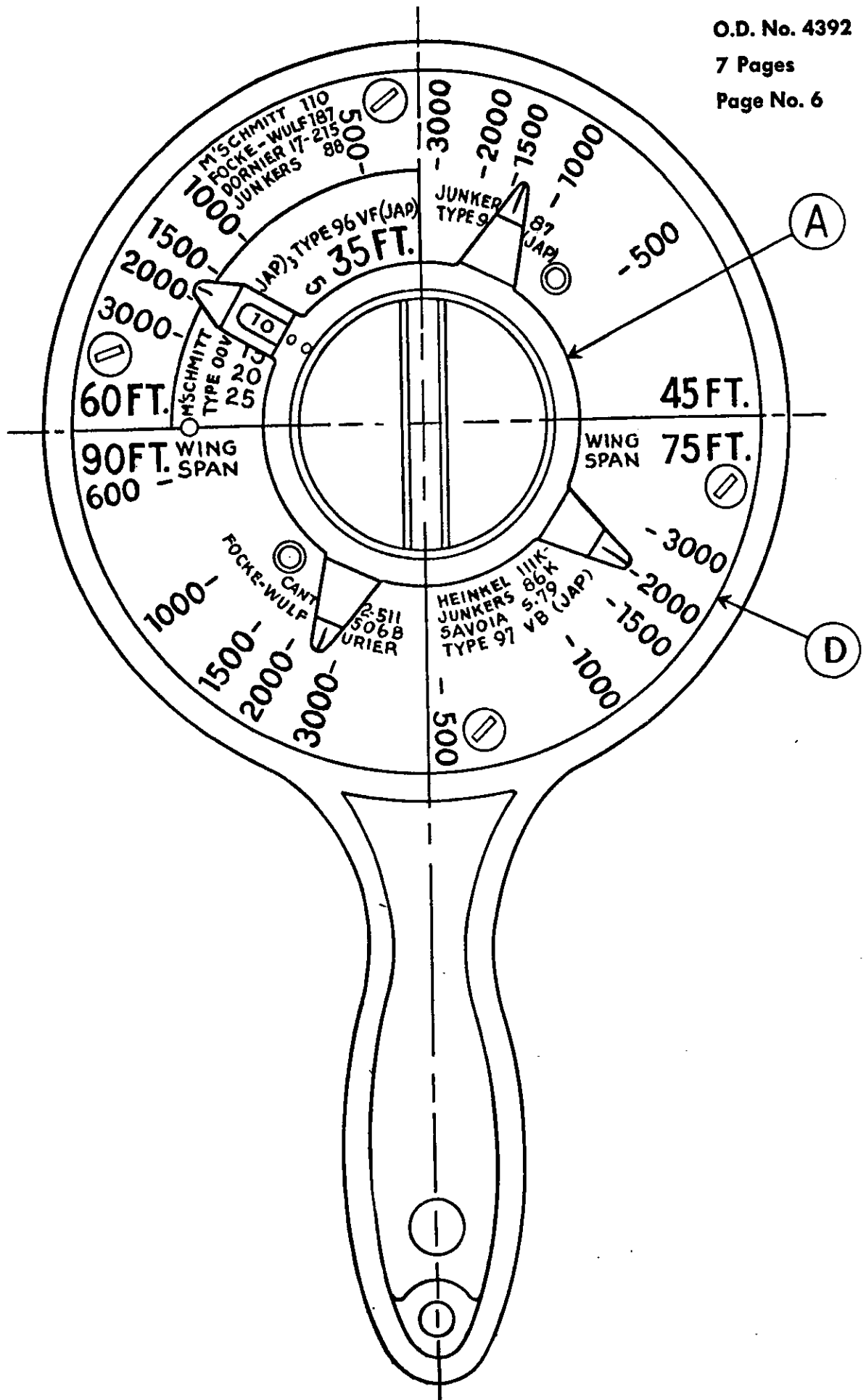
1. The lanyard attached to the indicator should be adjusted so that the distance from the indicator to the eye is maintained at 24 inches when the loop is dropped around the operator's neck and the lanyard is taut.
2. Estimate the wing span of the airplane target. These estimates may be aided by recognition of the silhouettes of the various airplanes. Several of the known airplanes are marked in the corresponding wing span zones on the indicator. Others are shown on page 3 of this pamphlet. In the zone corresponding to the airplane target wing span, set the pointer at the maximum effective range of the antiaircraft gun, or at any other optimum range.
3. Sight at the aircraft through the vertical wires, holding the indicator perpendicular to the line of sight.
4. When the gap between the vertical wires is bridged by the wing-spread of the aircraft, the signal for opening fire should be given.

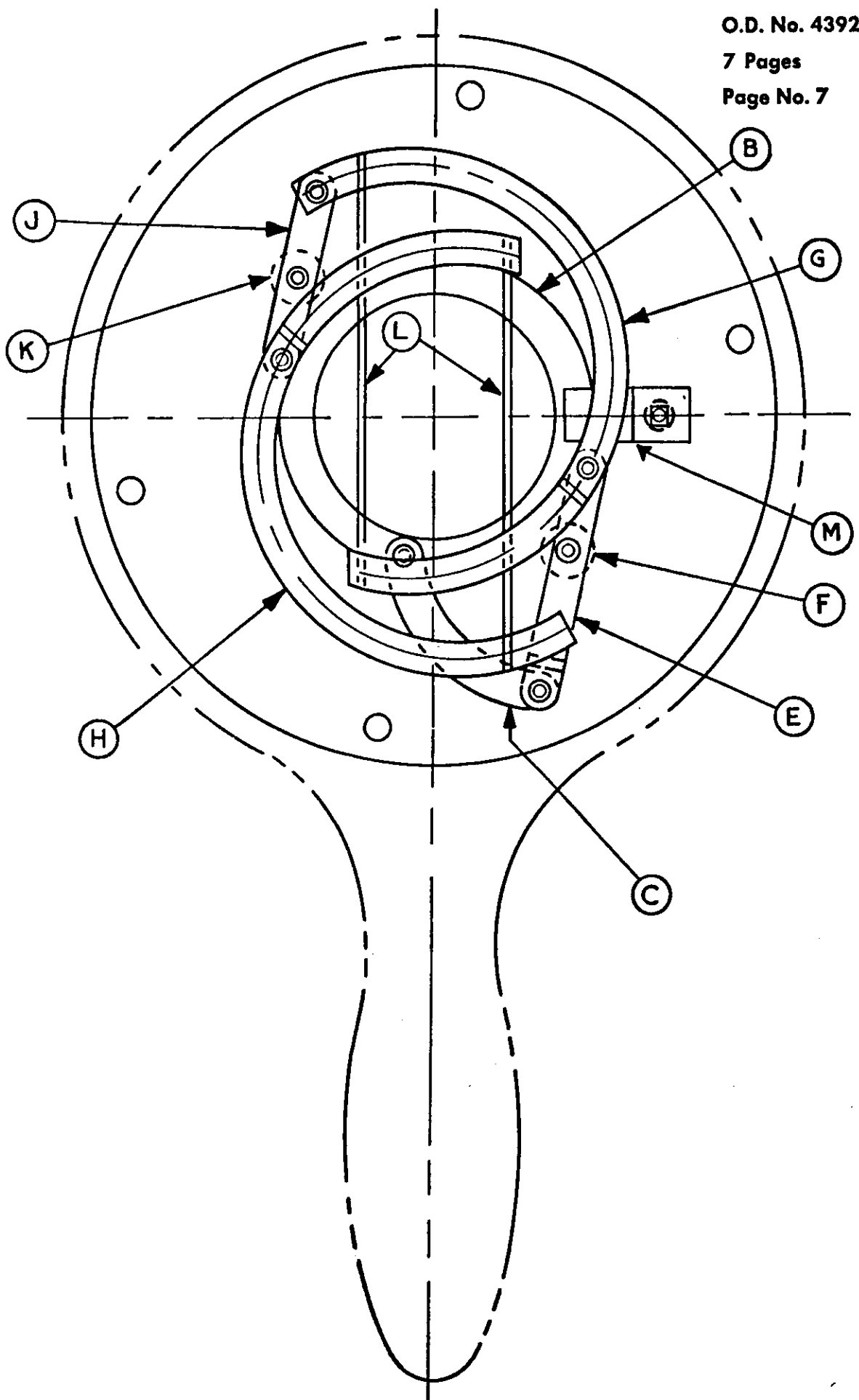
REPAIR

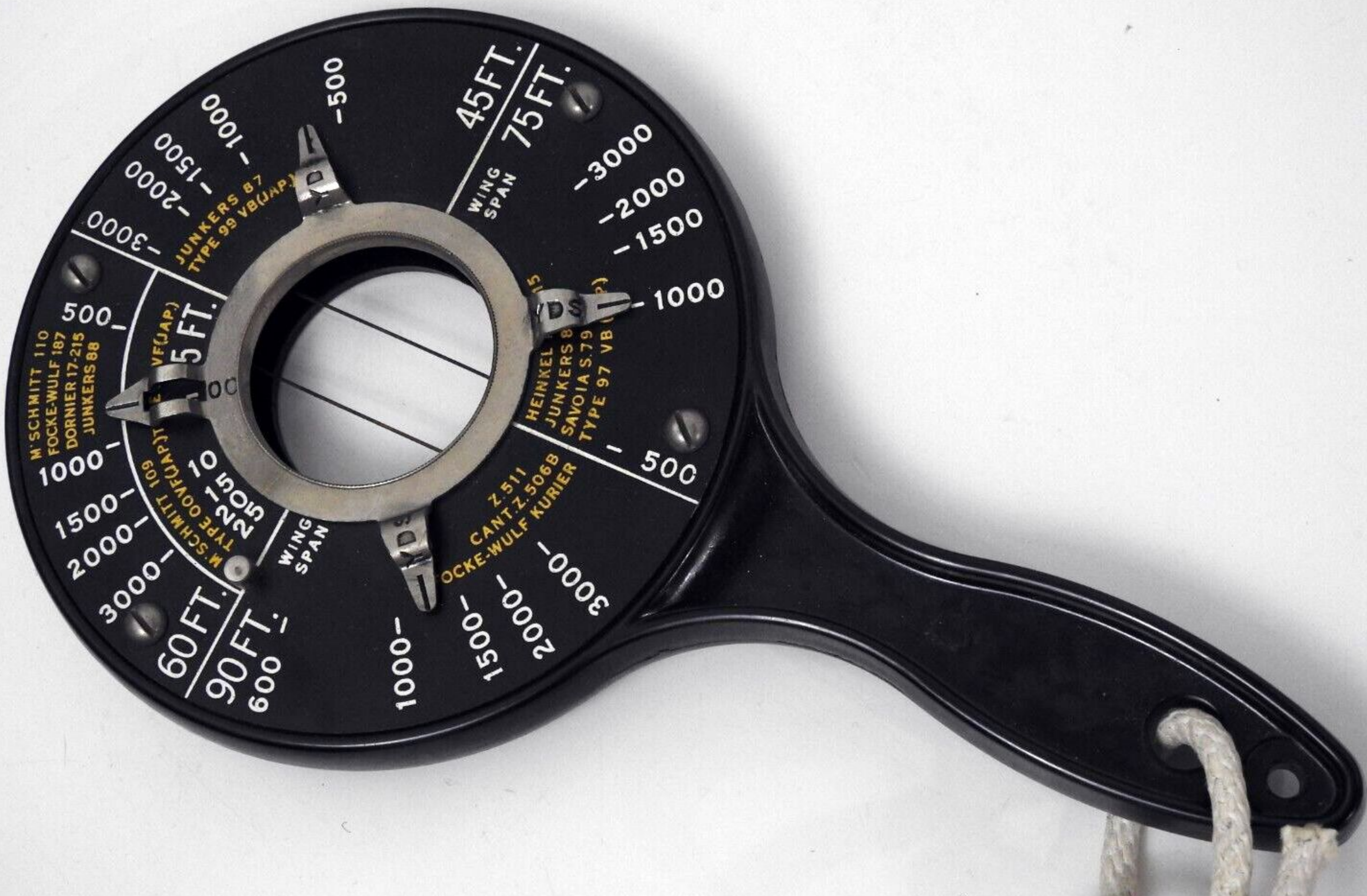
The cover plate of the indicator is not to be removed, except by those specifically authorized to repair the instrument. In case the vertical wires become warped or the instrument requires adjustment, the indicator should be turned over to the proper repair or maintenance personnel.

**DESCRIPTION OF MECHANICAL OPERATION
OF THE INDICATOR**

The following detailed description of the operation of the linkages inside the Antiaircraft Range Indicator Mark 1 is provided for use in adjustment or repair. Referring to the drawings on pages 6 and 7, when pointer (A) on the face side of the dial (D) is rotated, it moves ring (B) to which it is permanently fastened. The movement of ring (B) causes link (C) to rotate link (E) about pivot stud (F). This movement causes wire carrier (G) to move in one direction, and wire carrier (H) in the opposite direction, since both are connected to link (E) on opposite sides of pivot stud (F). The other ends of wire carriers (G) and (H) are supported by link (J) which pivots about stud (K) simultaneously and in the same direction as link (E). Therefore, since both links (E) and (J) rotate in the same direction at the same time, wires (L) move parallel to each other, and come together or go apart depending on the direction of rotation of the pointer. The flat spring (M) bears against ring (B) to provide slight friction, ensuring smooth operation of moving parts.







M. SCHMITT 110
FOCKE-WULF 187
DORNIER 17-215
JUNKERS 88

M. SCHMITT 109
TYPE OO(VF(JAP))
VF(JAP)

HEINKEL
JUNKERS 8
SAVOIA S.79
TYPE 97 VB(JAP)

Z.511
CANT. Z.506B
FOCKE-WULF KURIER

JUNKERS 87
TYPE 99 VB(JAP)

60 FT.
90 FT.

45 FT.
75 FT.

WING
SPAN

WING
SPAN

1000
1500
2000
3000

1000
1500
2000
3000

500
1000
1500
2000
3000

500
1000

1000

1500
2000
3000



TO BE HELD 24 INCHES FROM EYE

U.S. NAVY - BU. OF ORD.
A. A. RANGE INDICATOR
MARK. INSPECTOR W.R.M.
THE A. C. GILBERT COMPANY
NEW HAVEN, CONN., U.S.A. 1944

